DOCUMENT RESUME

ED 227 759 HE 015 998

AUTHOR	Adams, E. W.; Habtemariam, T.
TITLE	Perspectives on Veterinary Medical Education: The Tuskegee Experience.
INSTITUTION	Tuskegee Inst., AL. School of Veterinary Medicine.
PUB DATE	May 82
NOTE	69p.
PUB TYPE	Reports - Research/Technical (143) -- Tests/Evaluation Instruments (160)
EDRS PRICE	MF01/PC03 Plus Postage.
DESCRIPTORS	*Academic Achievement; *Aptitude Tests; Employment Experience; Grade Point Average; Graduate Surveys; Higher Education; *Minority Groups; Predictor Variables; *Veterinary Medical Education
IDENTIFIERS	*Auburn University AL; *Tuskegee Institute AL

ABSTRACT

The extent to which Veterinary Aptitude Test (VAT) scores are valid predictors of veterinary student performance and the effect of a summer enrichment program were assessed for Tuskegee Institute and Auburn University students. In addition, attention was directed to predictors of specialty choices and patterns of specialty choices and employment for minority veterinary graduates. Data were obtained from Tuskegee Institute student records, a survey of 1981-1982 Tuskegee Institute and Auburn University students, and a second survey of 1963-1978 Tuskegee veterinary alumni. For 122 Tuskegee students, attention was directed to various descriptive statistics, including grade point average (GPA) at entrance and during veterinary school and cumulative/subcomponent VAT scores. Comparative statistics were used to assess if there were sex differences for GPA and VAT scores. Additional statistical approaches were used to determine the effect of various variables on first-year veterinary school GPA. Questionnaire responses were analyzed for 59 Tuskegee and 111 Auburn veterinary students. The alumni questionnaire study is still in progress. Questionnaires and codes for student and alumni data are appended, along with statistical data. (SW)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED227759

PERSPECTIVES ON VETERINARY MEDICAL EDUCATION: THE TUSKEGEE EXPERIENCE

by

E. W. ADAMS, D.V.M., Ph.D.

T. HABTEMARIAM, D.V.M., Ph.D.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

F. W. Adams

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

✓ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

TUSKEGEE INSTITUTE

SCHOOL OF VETERINARY MEDICINE

TUSKEGEE INSTITUTE, ALABAMA 36088

May 1982

HE 015 998

TABLE OF CONTENTS

	Page No.
Introduction	1
Methods	5
Data Processing	8
Results and Discussion	10
Descriptive Statistics	10
Comparative Statistics	11
Multiple Regression Examination	12
Subsequent Analysis	15
Discriminant Analysis Programs	16
Student Questionnaire Study	18
Alumni Questionnaire Study	20
Projected Work	21
Projected Budget	25
References	26-27
Appendices	28-53
Appendix 1. Code for Student Data-VAT.	29
Appendix 2. Student Questionnaire.	30-36
Appendix 3. Code for Student Data Questionnaire.	37-40
Appendix 4. Alumni Questionnaire	42-48
Appendix 5. Code for Alumni Data	50-53
Tables	54-60
Table 1. Descriptive Statistics	54
Table 2-a. Analysis of Variance	55
Table 2-b. Multiple Regressive Parameters	56
Table 3. Correlation Matrix	57
Table 4. Analysis of Variance/Variables in Equation	58
Table 5. Classification Functions/ Classification Matrix, 2.0 and Over.	59
Table 6. Classification Functions/ Classification Matrix, 2.5 and Over.	60
Table 7. Basic Descriptive Statistics of Population Under Study	19

Perspectives on Veterinary Medical Education: The Tuskegee Experience

by

E. W. Adams, T. Habetmariam

Introduction

Veterinary medicine as any other educational discipline should measure the effectiveness of its educational program by examining the quality of the performance of students progressing through the professional curriculum, on state and national board examinations, and, finally, on the quality of veterinary health service they provide upon graduation. Such evaluations should begin with the admission process with specific attention being directed toward objective and subjective assessments associated with selecting those students believed to be able to withstand the rigors of four years of veterinary medical education with due emphasis placed on the requisites for retention and graduation.

The use of admissions criteria and standardized test scores for many of the minority students has become a controversial and emotional matter, as the fate of many futures hangs on the particular criteria set by that institution. There are many factors that affect the selection of students from the diverse pool of applicants who qualify for admission to the School of Veterinary Medicine at Tuskegee Institute. Existing cognitive criteria as predictors of success are carefully

examined with emphasis being placed upon description and prescription rather than on prediction and exclusion. Cognitive criteria were not intended to measure adaptability, motivation, creativity, native talent nor the capability to succeed in a particular occupation. Although objective testing procedures, such as the SAT, MCAT and VAT scores, have been utilized as a primary criterion to select students for admission, these tests, when given undue emphasis, have been found to be inadequate for such crucial decision making (1,2,3,19). Several in-depth analytic studies have been conducted to evaluate student selection in certain of the professional disciplines (4-14), but, apart from reports by Halm (8), Layton (9), Noeth, et al (11), no such objective and quantitative methodology exists for veterinary medicine. Halm (8) found that preprofessional grades, quantitative thinking scores, and personal evaluations were the best predictors of academic success as reflected by the level of first-year veterinary school grades. Layton (9) used the first-year veterinary medical grade point averages as the criterion for academic success and twenty predictor variables were selected and compared with this criterion. The total honor point ratio in preveterinary medical course work, the veterinarian scale of the Strong Vocational Interest Blank, and the preveterinary medical achievement test of the Iowa Veterinary Aptitude Test combined to provide a multiple correlation coefficient of .60. Noeth, et al (11) studied eleven variables with regard to their values as predictors of success. These eleven variables included the five

scores of the Veterinary Aptitude Test and the combined score; grade point average for all preveterinary college work; science average for all preveterinary college work; high school rank; and the three scores of the Scholastic Aptitude Test: Verbal (SAT-V), Quantitative (SAT-Q), and Total (SAT-T). The criterion defining success was the first semester performance in the veterinary medical program. A step-wise regression analysis was utilized to investigate the above data and a sequence of multiple linear regression equations was obtained for evaluation.

For the minority student after admission to the professional program, multiple factors come into play to affect student performance, i.e., cultural isolation, academic background deficiencies, faculty insensitivity and cultural differences. Above all the eventual selection of practice/specialty areas, interest in research and academic medicine may also be determined and/or reinforced during veterinary medical training. The effect of role model identification, sex, race and background have not been evaluated in this regard. Due to the serious underrepresentation of minorities in the health professions, it is vital that the factors of ethnic origin and sex be examined as to their effect on career selection in the science fields (20). Tuskegee Institute provides an excellent model to investigate this problem in the field of veterinary medicine. The student population, the most integrated of any veterinary school in the nation, consists of 34% Caucasian, and a minority group that includes Blacks, Hispanics,

Native Americans, Foreign Black Nationals, and Asian Americans. In addition, 48% of the student body is female. This diverse student population provides Tuskegee Institute with an unusual and unique opportunity to examine the multiple cognitive and noncognitive variables that contribute to the admission, retention and graduation, and professional responsibilities after graduation, of a population of students not found in another veterinary school in the United States.

The specific objectives in this study are to examine the following:

1. To what extent do VAT scores serve as valid predictors of veterinary student performance after admission to the professional school and, concurrently, address the question "Is the summer enrichment program helpful in assisting student performance as shown by improved VAT scores, and grade point average over a four-year period?"
2. Could one predict veterinary medical school graduates specialty choices based on a set of multiple factors? and, is sex an important variable in influencing veterinary medicine specialty choices and attitudes toward the veterinary medical profession?
3. What is the pattern of specialty choices and employment for minority veterinary graduates and what is the future for minorities in the veterinary profession?

It is important to note that these three objectives address the broad areas of veterinary medical education from admission to professional responsibilities of alumni.

Methods

Data Collection: The determinants of student performance and alumni employment patterns were systematically identified and scrutinized. Two main types of data sources, viz., preexisting and those generated via questionnaire, were selected as the best approach for data collection.

Three measurement instruments were utilized for data collection in this project. These consist of:

1. Collection of existing data from the records of the School of Veterinary Medicine at Tuskegee Institute. Variables of significance as predictors of student performance were identified based on literature review of comparable studies, previous experience, and on availability of quantitative data. The study unit was an individual student and the variables of interest were: sex (X_3), race (X_4, X_5), veterinary school entering grade point average (X_6), participation in summer enrichment program (X_7), Veterinary Aptitude Test (VAT), scores of reading/comprehension (X_8), quantitative ability (X_9), biology (X_{10}), chemistry (X_{11}), verbal memory (X_{12}), combined VAT score (X_{13}), grade point average (GPA) for first-year (Y_1), GPA for second-year (Y_2), GPA for third-year (Y_3), GPA for fourth-year (Y_4), and total score on the veterinary national board examination (Y_5). The appropriate data collection format and coding key is provided (Appendix 1).

In the above given variable identification format, the Xs represent potential predictor variables and the Ys are the respective dependent variables which represent the criteria for successful performance in veterinary school. Variables X_3, X_4, X_5, and X_7 are nominal in nature while the rest of the variables are quantitative. To enable the quantification of nominal variables, appropriate indicator or dummy variables were set up such that, for example, in the case of the nominal variable for sex:

$$X_3 = \begin{cases} 1 \text{ if sex of student is male, and} \\ 0 \text{ if female.} \end{cases}$$

The others were handled in a comparable manner using the general representation for such cases by creating (k-1) dummy variables where k is the total number of specified nominal variables. The criteria for successful student performance were cumulative grade point averages above the minimum for retention at the end of the first year, second year, third year, fourth year, and the score on national board examination.

2. In order to address the second and third objectives, two types of detailed questionnaires, one for veterinary students at Tuskegee Institute and Auburn University, (1981-1982), and a second type to elicit information from Tuskegee Institute Veterinary Alumni to cover the period 1963-1978, were designed. The questionnaires dealt with specific subject matter and variable data in order to shed light on the objectives of interest in this section.

The detailed questionnaire for veterinary students is given in Appendix 2; the corresponding variable identification and computer coding key is indicated in Appendix 3. The questionnaire for the veterinary alumni is given in Appendix 4 and the respective coding key is in Appendix 5.

Upon completion of the preparation of the questionnaire, it was pretested on selected students and faculty and ambiguous or unclear questions were improved. A listing of the current addresses of the alumni was obtained from the records of the School of Veterinary Medicine to mail out the questionnaire. Along with a cover letter explaining the intent of the project, the questionnaire was mailed along with a self-addressed and prestamped envelope to facilitate prompt response. A total of 338 questionnaires was mailed to the total population of Tuskegee's Veterinary Alumni, 1963-1978, whose known residences are in the United States and Puerto Rico. A total of 127 responders, (37.5%), returned the questionnaire within a period of 1-2 months. The questionnaire contained information on 108 variables in a quantitative format as given in Appendices 4 and 5.

The questionnaire pertaining to veterinary students at Tuskegee and Auburn was hand delivered to all the

graduating classes of 1981 and 1982 during the spring semester, a time period when the seniors would have made decisions on their employment and practice preferences, etc. Out of a total of 120 graduating students at Tuskegee for the two-year period, 59 of the students (49%) completed and returned the questionnaire. In the case of Auburn, 111 graduating students out of 240 responded (46%). The questionnaire had specific quantitative information on 50 variables as described in Appendices 2 and 3.

Data Processing

Although the study concerns Tuskegee students and graduates, Auburn University veterinary students graduating in 1981 and 1982 were also studied to provide comparative data for two schools in one state serving different student populations.

After collecting data for each of the segments, the information pertaining to each variable was coded and entered on the VAX 11/750 computer of Tuskegee Institute, forming the data base for detailed analysis.

Four types of statistical procedures were used for data analysis. These were: basic descriptive statistics, Chi square technique to examine causal associations, and multivariate techniques viz multiple linear regression and discriminant analyses.

Detailed data analyses were performed using the biomedical data programs (BMDP) statistical package (20). Descriptive statistics were performed using BMDP2D, a program which enables counting and listing of distinct values for each variable, computation of univariate statistics including mean, median, standard deviation, skewness and kurtosis. It also plots the positions of several estimates of location and provides a histogram to indicate the pattern of distribution.

The major thrust of the data analysis is on developing predictor and/or discriminator models for successful performance of students, specialty choices, job preferences, etc. For such a study, linear multivariate models were used with the format:

$$Y = \beta_o + Y_1 X_1 + -- + \beta_k X_k + \varepsilon_k$$

where:

Y = dependent variable, e.g., GPA, specialty preferences, etc.

$X_1 -- X_k$ = determinants of success or preferences, variable data collected via questionnaire and from existing sources which serve as the independent or predictor variables.

$\beta_o -- \beta_k$ = coefficients to be estimated which indicate the relative strength or importance of each variable (X_k) in predicting Y.

ε_k = unexplained variability (error term).

Using such a model, two specific linear models were examined.

BMDP1R - multiple linear regression)
) to establish the
BMDP2R - stepwise linear regression)

predictor equation for Y from a set of independent variables. The latter one, i.e., stepwise regression (BMDP2R) was of the type whereby forward stepping variable selection was followed by backward stepping procedures to enable variable screening and reduction so as to end up with the best subset of predictor variables. These had to be narrowed down from a large number of variables to a few meaningful and highly predictive ones.

BMDP7M--a discriminant analysis program was used to devise classification functions to enable one to categorize a student as a successful or unsuccessful performer. Such decision making criteria for success was arbitrary cut off points of GPA set at levels of >2.0 vs <2.0, >2.5 vs. <2.5, etc. Using such an approach, the probabilities of correct classification of students' performance were evaluated. The contribution of variable, such as VAT scores, summer enrichment programs and others, was examined accordingly.

Results and Discussion

The coding format and computer entry of variables of interest to create the study data base have been provided in the Appendices. The results of preliminary data analysis in each of the three components of the project will be presented.

1. Descriptive Statistics

There was a total of 122 cases in this section which were analyzed using BMDP. Table 1 presents a summary of some of the important descriptive statistics.

It shows, for example, that the average GPA at the time of entering veterinary school at Tuskegee (X_6) is 3.241, which is quite high, as are the GPAs for the first and second year students with the respective values of 3.021 for Y_1 and 2.933 for Y_2. The average for the cumulative VAT score is 135.58 (X_{13}) and the specific VAT subcomponent values are also given as variables X_8-X_{12}. For each of these, the standard deviation and coefficient of variation are also provided. Note that the coefficient of variation for the GPAs is low indicating an adequate sample size for the study.

2. Comparative Statistics

Comparative statistics were used to assess if there were differences between the performance of females and males on GPAs and VAT scores.

The paired t statistic between males and females for each of the above variables showed no statistically significant result attributed to sex at $\alpha = .05$, and .01. Although preliminary, it is significant to note that sex of a student does not seem to influence performance in veterinary schools, at least not during the first two years of basic sciences and further studies need to be carried out to see if there are any differences during the clinical years.

3. Multiple Regression Examination

An examination of the data using multiple regression (BMDP1R), using the first-year GPA (Y_1) as the dependent variable, provided the results shown in Tables 2a and b. In Table 2a, the analysis of variance for evaluating linearity and other such evaluations is provided. The F value of 11.687 indicates that the linear model approach is satisfactory and when examined in relation to the multiple correlation coefficient (R) of 0.7135, this appears promising. The multiple coefficient of determination (R^2) of 0.509 indicates that about 51% of the variability could be explained using all the variables given in Table 2b. Much more detailed information about the β coefficients, the respective standard errors and standardized regression coefficients are provided. A preliminary examination of the table with emphasis on the contribution of each predictor variable on the dependent variable using the standardized regression coefficients for assessment, indicated that among all the potential predictor variables, X_6 (entering GPA), X_4, X_5 (race), X_7 (participation in summer enrichment), X_{10} (biology VAT score), and X_{12} (verbal memory VAT score) were the most important predictors. Three points need to be raised at this juncture. First, the contribution of X_7 or participation in summer program

is positive and substantial in determining the successful performance of a student during the first year. Therefore, although preliminary, the effort of the school in providing such an avenue to assist its potential candidates for the past five years is a positive effort with tangible and quantitatively measurable results which would support the basic objectives of why such a program was needed. Second, looking at VAT scores as predictors, only the biology score (X_{10}) and verbal memory (X_{12}) seem to be important. It is interesting that verbal memory is one of the useful predictors with significant contribution to Y_1 which could be interpreted in a way to indicate that since students would be subjected to massive biomedical information during their basic sciences years, a student's verbal memory would have to be sharper than other analytic or problem-solving skills, such as quantitative ability or chemistry, etc. This may also indicate that the teaching and test types the students are exposed to, either directly or indirectly, promote rote memory rather than rational, problem-solving efforts. Third, race as a predictor of performance was of value; however, the use of race as a variable in our preliminary analysis is not appropriate because of a basic inadequacy

of comparable standards with which to begin. The white students who apply to Tuskegee are generally those with higher VAT scores and GPAs than minority applicants; however, a substantial number have participated in the summer program. Therefore, this subpopulation of students has been as highly selected as the minority applicants considering noncognitive factors as well as entering GPAs, or X_6 and VAT scores. Therefore, the subpopulation of minorities as a group in the school may not have a comparable entering GPA or not score on a level with that for whites. If one uses race as a criterion variable with such a discrepancy, there will be obvious fallacies in the analysis and the results. Therefore, in this preliminary analysis, although race is an important variable, the results may be fallacious for reasons given above. What we propose to do then is to analyze the performance data of minorities and whites separately, and examine the validity of VAT scores and other factors as predictors. This aspect will be done in the future as our sample size for both subpopulations increases during the coming two to three years of this project.

4. Subsequent Analysis

Subsequent to the multiple regression program, a stepwise forward selection followed by backward stepping procedure (BMD2R) was used to analyze the same set of variables described above. The dependent variable was first-year GPA (Y_1). A correlation matrix (Table 3) is provided to indicate the correlation of any pair of variables. Note that the correlation among the predictor variables is low, indicating independence, except for the VAT variables. All five are correlated with X_{13} which is the total VAT score and this is to be expected.

The stepwise regressive program terminated at the end of step 3 and the following results were obtained (Table 4). The variables selected for prediction were X_6 (entering GPA), X_{10} (biology VAT score) and X_{12} (verbal memory VAT score). The R and R^2 values were 0.7007 and 0.4909 respectively. The results confirm the preliminary references made under No. 3 above indicating that these three variables are the most important predictors of performance. The model, therefore, is:

$$\hat{Y} = \underset{}{-0.023} + \underset{(0.114)}{0.468}\, X_6 + \underset{(0.007)}{0.028}\, X_{10} + \underset{(0.006)}{0.023}\, X_{12}$$

The respective standard errors are in brackets. As given earlier, $\hat{Y}$ is the first-year GPA and X_6, X_{10}, X_{12} are

variables representing entering GPA, biology VAT score and verbal memory VAT score. The F ratio was 37.93 indicating significant linearity between the independent variables and the dependent.

A sequence of other stepwise regression programs was also conducted using other dependent variables and a fuller discussion of these will be presented in the final report.

5. Discriminant Analysis Programs

Finally, in this section, a set of discriminant analysis programs (BMDP7M) was run using the dependent variable of first-year GPA (Y_1). The demarcation or cut off points for successful vs unsuccessful performance was set arbitrarily at first-year GPAs of >2.0 vs <2.0, >2.5 vs <2.5, >3.0 vs <3.0, >3.5 vs <3.5. For this report, only the first two demarcation criteria results are presented.

Case 1. Demarcation for success set at >2.0 for 1st-Year GPA

The discriminant model in this case selects only X_{10} (biology VAT score) for classification purposes (Table 5). The probability of correct classification into less than 2.0 was 0.83; above 2.0 it was 0.75 with an overall probability for correct classification of 0.75.

This is quite satisfactory considering that only one variable is used for such decision making. Interestingly,

too, the biology VAT score is an important determinant at this level.

Case 2. Demarcation for success set at 1st-Year GPA >2.5

Table 6 presents these results.

The variables selected at this level were: X_6 (entering GPA), X_{10} (biology VAT score) and X_{12} (verbal memory).

The classification functions were:

$$D1 = -49.747 + 27.124\ X_6 + 0.3687\ X_{10} + 0.3027\ X_{12}$$

$$D2 = -64.206 + 29.742\ X_6 + 0.4566\ X_{10} + 0.4325\ X_{12}$$

where:

D1 = Classification under GPA of 2.0

D2 = Classification over GPA of 2.0

$X_6 - X_{12}$ = As described above.

Using the above two equations, a student was classified into either D1 or D2 depending on how great a value of D1 or D2 was obtained when a student's known entering GPA (X_6), biology VAT score (X_{10}), and verbal memory score (X_{12}) are plugged into the two equations. The one with the largest D value of the two classification functions would be considered an individual's category. For example, if Student A had an X_6 value of 3.00, X_{10} of 22.0 and X_{12} of 25, then

$$D1 = -49.747 + (27.124)(3.00) + (0.3687)(22.0) + (0.3027)(25) = 47.3039$$

$$D2 = -64.206 + (29.742)(3.00) + (0.4566)(22.0) + (0.4325)(25) = 45.8177$$

The decision, then, is that Student A would be in category D_1, which means that his first-year GPA would be less than 2.0.

In addition to the classification functions given above, the probabilities of correct classifications are also provided in Table 6. In this case, the probability of correct classification into the category of GPA of less than 2.0 was 0.83; for GPA of over 2.0, it was 0.76 with an overall correct probability of classification of 0.78. Again, these probabilities are quite satisfactory and seem promising. It is also significant to note the variables of importance at this level, viz, X_6, X_{10}, X_{12}, the same ones identified earlier as good predictors.

6. Student Questionnaire Study

The data base for this section consists of 59 cases or student responders from Tuskegee and 111 cases from Auburn University. For each responder, a total of 50 variables (independent and dependent) has been identified and quantitative data gathered as described under Methods.

Using this data base, the following summary (Table 7) is presented from a set of descriptive statistics (BMDP2D) programs run using Tuskegee students and Auburn students separately and then combining the two.

TABLE 7

BASIC DESCRIPTIVE STATISTICS OF POPULATION UNDER STUDY

Variable		Tuskegee			Auburn			Combined		
		Total	Mean	S.D.	Total	Mean	S.D.	Total	Mean	S.D.
X_2	Male	38	--	--	82	--	--	120	--	--
X_3	Female	22	--	--	29	--	--	51	--	--
X_4	Minority	32	--	--	0	--	--	32	--	--
X_5	White	32	--	--	111	--	--	133	--	--
X_6	Age	--	25.3	5.1	--	25.7	2.1	--	25.6	3.1
X_7	Rural	24	--	--	59	--	--	83	--	--
X_8	Urban	34	--	--	52	--	--	76	--	--
X_{10}	# Yrs/ College	--	3.9	1.2	--	4.3	1.5	--	4.2	1.4

Results of detailed descriptive statistics of each of the variables from the questionnaire were also obtained using BMDP2D. Since the analysis is still preliminary and some data need to be updated, detailed results and discussions have not been presented. There are other basic issues as laid out in the objectives which need careful analysis and which have not yet been prepared.

Alumni Questionnaire Study

This section of the project has not progressed very far due to time lag involved in mailing out and waiting for the respondents. As indicated earlier, 127 responses have been received so far and the data on these have been coded and are now ready for entry into the computer data base. Therefore, no analysis and/or discussions are presented at this time.

Projected Work

The study has become comprehensive, detailed and rather complex. It has consequently become demanding both in time and in terms of data handling capacities. Not only is it extensive and comprehensive, but its significance and implications for Tuskegee and veterinary medical education at large would be the most crucial aspects of the study. Therefore, it needs to be considered definitively and scientifically. The future of the project involves the following major areas:

1. Need for follow-up over 4-5 years through college so as to obtain an adequate sample size of student cases with respective GPAs for the 1-4 years (Y_1 - Y_4) and also the corresponding national board examination scores (Y_5). Since the study is basically longitudinal in nature, and since the preliminary findings indicate potential predictor and classification models, it is vital that these be followed up in greater detail by collecting the respective dependent variable data throughout the four years of college. Correspondingly, too, there is need for updating other relevant information, such as high school GPAs, standard aptitude test scores (SAT) and other such potential variables which have not yet been evaluated in this model.

2. Once a large data base for all the dependent and independent variables has been collected and also with respect to the questionnaire data which have not been analyzed rigorously yet, detailed statistical analysis of the data remains to be done. The analysis as set out in the proposal has not yet been completed simply due to lack of time. Thus, it is vital that an extension of time be allowed to the project in order to enable a careful and thoughtful analysis of the data base. The implications of the results of this project are far-reaching and a well laid out analysis and interpretation of findings need more time. One of the vital areas for such a careful examination is the question of potential differences between races and, in such a case, an exhaustive examination of the situation is crucial to the validity of the findings. Again, as emphasized, it is important to recognize the unique setting of the School of Veterinary Medicine at Tuskegee Institute in the sense that it is only at Tuskegee that such issues could be adequately addressed simply due to the mix of the student population where there is balance between white and black students. No other veterinary school has comparable situations for such study. Therefore, both to provide a

detailed analysis of the data in certain selected cases as well as to complete the planned analysis with updated data over the progression of students through the veterinary curriculum, an extension of time and additional resources to enable the continuation of the project has become a necessity.

3. In order to facilitate data handling, processing and completion of the project pertaining to the veterinary student, follow-up studies and additional support are needed. The following table presents a breakdown of the projected budget during the forthcoming three years. The single most important request is to purchase a microcomputer with independent information storage capabilities via floppy diskettes or hard disk, such as are available from Digital, Radio Shack, etc. This is crucial since a large amount of sensitive student data is being handled with need for updating, file management and data processing. With the aid of a microcomputer, all relevant information could be stored and retrieved efficiently enabling maximal utilization of the data for the successful completion of the project.

PROJECTED BUDGET -- YEARS 1982/83 -- 1984/85

Item	Cost Per Year 1	2	3
VT 180 Intelligent Terminal	$ 4,000	-0-	-0-
Disk Drive Unit (Hard)	$ 4,000	-0-	-0-
LA 120 Character Printer	$ 2,400	-0-	-0-
Acoustic Coupler (Comdata 302 A-33)	$ 250	-0-	-0-
Maintenance of Computer Equipment (10% of cost)	$ 700	$ 700	$ 700
Supplies (paper, ribbons, etc.)	$ 1,000	$ 1,000	$ 1,000
Telephone	$ 300	$ 300	$ 300
Publications	$ 200	$ 200	$ 200
Personnel:			
Dr. Habtemariam (10%)	$ 3,000	$ 3,300	$ 3,600
Student Programmer (Part-time)	$ 3,000	$ 3,000	$ 3,000
Typist (50% time)	$ 3,500	$ 3,800	$ 4,100
Fringe Benefits (13% of above)	$ 845	$ 923	$ 1,010
Total	$ 24,195	$ 13,223	$ 13,210

References

1. Cleary, T. A. 1968. Test bias: Prediction of grades of Negro and white students in integrated colleges. J. of Educational Measurements. 5:115-124.

2. Linn, R. L. 1973. Fair test use in selection. Review of Educational Research. 43:139-161.

3. Goldman, R. D. and M. H. Widawski. 1976. An analysis of types of errors in the selection of minority college students. J. of Educational Measurement. 13:185-200.

4. Brazziel, W. 1977. Non-intellective predictors of student persistence/attrition and performance; implications for college and university research and planning. Paper presented at The International Forum of the Association for Institutional Research. Montreal.

5. Dixon, W. J. and M. B. Brown. 1979. Biomedical computer programs P-series. University of California Press, Berkeley and Los Angeles. 880pp.

6. Goldman, R. D. and B. N. Hewitt. 1975. An investigation of test bias for Mexican-American college students. J. of Educational Measurement. 12:187-196.

7. Hadley, J. 1977. An empirical model of medical specialty choice. Inquiry. 14:384-401.

8. Lowenthal, W., et al. 1977. Predictors of success in pharmacy school: PCAT vs. other admission criteria. Am. J. of Pharmaceutical Education. 41:276-9.

9. McGrath, E. and C. N. Zimet. 1977. Female and male medical students: differences in specialty choice selection and personality. J. Med. Education. 52:293-300.

10. McLean, D. R. and S. M. Dinham. 1977. A statistical procedure for predicting medical school graduates specialty choices. Ann. Conf. Res. Med. Educ. 16:274-8.

11. Milstein, R. M., et al. 1976. Prediction of screening decisions in a medical school admission process. J. of Medical Education. 51:626-33.

12. Petersen, N. S. and M. R. Novick. 1976. An evaluation of some models for culture-fair selection. J. of Educational Measurement. 13:3-29.

13. McLean, D. R. and S. M. Dinham. 1977. A statistical procedure for predicting medical school graduates specialty choices. Ann. Conf. Res. Med. Educ. 16:274-8.

14. Milstein, R. M., et al. 1976. Prediction of screening decisions in a medical school admission process. J. of Medical Education. 51:626-33.

15. Peterson, N. S. and M. R. Novick. 1976. An evaluation of some models for culture-fair selection. J. of Educational Measurement. 13:3-29.

16. Plovnick, M. S. 1975. Primary care career choices and medical student learning styles. J. Med. Educ. 50:849-55.

17. Sachs, L. S. 1977. Medical specialty choice: replication and extensions. Annual Conf. Res. Med. Educ. 16:215-20.

18. Slack, W. V. and D. Porter. 1980. The scholastic aptitude test: a critical appraisal. Harvard Educational Review. 50:154-175.

19. Weinstein, P. and C. Gripple. 1975. Some determinants of career choice in the second-year of medical school. J. Med. Educ. 50:194-198.

20. Wilburn, A. Y. 1974. Careers in science and engineering by Black Americans. Science. 184:1148-1154.

APPENDICES

APPENDIX 1

CODE FOR STUDENT DATA-VAT

Column Totals	Format	Variable Name
2	I2	(X1) Year — Last 2 digits
2	I2	(X2) Student Number
1	I1	(X3) Sex — 1) Male; 0) Female
2	2I1	(X4) Race — (1st Col. 1) Minority; (0) If Not; (2nd Co. 1) White; (0) If Not
4	F4.2	(X6) High School entering GPA
1	I1	(X7) Summer enrichment participant — 1) Yes; 0) No
5	Ix, IX, I2	(X8) Post VAT - Reading/Comprehension
5	" " "	(X9) " " - Quantitative Ability
5	" " "	(X10) " " - Biology
5	" " "	(X11) " " - Chemistry
5	" " "	(X12) " " - Verbal Memory
6	I3, IX, I2	(X13) " " - Combined Score
4	F4.2	(X14) First-Year GPA
4	F4.2	(X15) Second-Year GPA
2	A2	(X16) State - 2-letter abbreviation; FO - Foreign Student

APPENDIX 2

SCHOOL OF VETERINARY MEDICINE
TUSKEGEE/AUBURN UNIVERSITY
VETERINARY MEDICAL EDUCATION STUDY

STUDENT QUESTIONNAIRE

I. Background

1. Year in the School of Veterinary Medicine _____

2. Sex _____

3. Cumulative G.P.A. _____

4. Age (Years) _____

5. Home State _____

6. Is your background mainly urban or rural? _____

7. Education: Degrees you had at the time you entered the School of Veterinary Medicine _____

8. How many years had you been in college (include Junior College) at the time you entered the School of Veterinary Medicine _____

II. Student Interest

1. Were the courses you took in the School of Veterinary Medicine relevant to your interests?

a. Yes _____ b. No _____

Explain: _____

_____

_____

2. Looking at the overall curriculum, would you say that your educational experiences have prepared you for a career in veterinary medicine?

a. Extremely well _____

b. Above average _____

c. Average _____

d. Less than average _____

3. How would you rate your veterinary medical training with respect to relationships with faculty, fellow students, library and AT-AV resources?

   a. More than adequate _____

   b. Adequate _____

   c. Less than adequate _____

4. When discussing the veterinary medical program at your university with students from other veterinary colleges, would you say that your program is:

   a. Superior _____

   b. Equal _____

   c. Below average _____

Explain: _____

_____

_____

5. Do you feel that you would have made a wiser choice had you selected another field (major)?

   a. Yes _____ b. No _____

Explain: _____

_____

_____

III. Student Performance

1. How does your academic performance (GPA) in the School of Veterinary Medicine compare with your overall performance in your preveterinary studies?

   a. Improved _____

   b. Remained about the same _____

   c. Somewhat lower _____

2. Do you feel there were enough educational materials (autotutorial aids, computer-based education, library, etc.) to assist your education?

a. Yes _____ b. No _____

Explain: _____

_____

_____

3. Has your clinical training provided you with sufficient opportunity to become proficient in basic clinical procedures?

a. Yes _____ b. No _____

Explain: _____

_____

_____

4. Has your exposure to research been such that your appreciation has increased for the need for members of the profession to become involved in research?

a. Yes _____ b. No _____

Explain: _____

_____

_____

IV. Student Satisfaction

1. Has your interest in veterinary medicine increased after going through the vet med curriculum at your school?

a. Yes _____ b. No _____

Explain: _____

_____

_____

2. Were you enthused when you entered veterinary medicine school?

a. Yes _____ b. No _____

Explain: _____

_____

_____

3. To what extent has your veterinary medical education fulfilled your desires with respect to providing you with the necessary data base to develop and perform basic clinical skills?

a. Very satisfactorily _____

b. Satisfactorily _____

c. Less than satisfactorily _____

d. Inadequately _____

4. What is your state of enthusiasm now?

a. Increased _____ b. Decreased _____

Explain: _____

_____

_____

5. Have you been motivated to look into some specific areas of your interest?

a. Yes _____ b. No _____

Explain: _____

_____

_____

6. What is your overall satisfaction index with your veterinary education at your university?

a. Excellent _____ c. Satisfactory _____

b. Good _____ d. Poor _____

V. Specialty Choices

1. Upon graduation, in which of the following specialty areas would you be interested? Rank your preferences from 1--highest to 3--least.

a. Small Animal Practice _____

b. Large Animal Practice _____

c. General (Mixed) Practice _____

d. Government Service _____

e. Teaching/Research _____

f. Other (Explain) _____

_____

2. What was your specialty choice at the time your entered veterinary medicine school?

_____

3. If your specialty choice has changed since the time you entered veterinary medicine school, why did you change your mind?

a. Interests changed _____

b. Money more attractive _____

c. Other (Explain) _____

_____

_____

VI. Professional Sensitivity and Attitude as a Prospective Veterinarian

1. As a prospective veterinarian, do you have any reservations about performing the following controversial items?

		Some	None
a.	Spaying	_____	_____
b.	Neutering	_____	_____
c.	Euthanasia	_____	_____
d.	Ear Cropping	_____	_____
e.	Tail Cropping	_____	_____
f.	Hunting	_____	_____
g.	Animal Experimentation	_____	_____

VII. Miscellaneous

1. Has your veterinary education motivated you to develop problem-solving skills?

   a. To a great degree _____

   b. Somewhat more than before _____

   c. No change _____

2. Are you interested in furthering your training by going into an internship or graduate school?

   a. Yes _____ b. No _____

   Explain: _____

   _____

3. Do you feel you would benefit from staying at this university for further training in some discipline?

   a. Yes _____ b. No _____

   Which discipline? _____

4. Would you like to return to this university's School of Veterinary Medicine to teach or conduct research?

   a. Very interested _____

   b. Somewhat interested _____

   c. Not very interested _____

   d. Not at all interested _____

5. Are you willing to recommend this university's School of Veterinary Medicine to prospective students?

   a. Enthusiastically _____

   b. With minor reservations _____

   c. With important reservations _____

   d. With most serious reservations _____

   e. Would not recommend _____

[illegible] of the questionnaire.

[illegible] your cooperation.

APPENDIX 3

CODE FOR STUDENT DATA QUESTIONNAIRE

Column Totals	Column Spaces	Format	Names	Variables T - Tuskegee A - Auburn
2	1 - 2		(X1)	
3	3 - 5		(X2)	Year and Student Number
1 2	6		(X3)	Sex (1 - Male (0 - Female
1	7		(X4)	Race (1 - Minority) 1st Column (0 - Not Minority)
1	8		(5)	Race (2 - White) 2nd Column (0 - Not White)
4	9 - 12		(X6)	G.P.A.
2	13 - 14		(X7)	Age
2	15 - 16		(X8)	Home State
1	17		(X9)	Background (1 - Rural) (0 - Urban) 1st Column (0 - Both)
1	18		(X10)	Background (0 - Rural) (0 - Urban) 2nd Column (1 - Both)
4	19 - 22		(X11)	Degrees - Highest Degree
1	23		(X12)	No. of Degrees Received
1	24		(X13)	No. of Years in College
	25		(X14)	Question II-1 (1 - Yes (0 - No
	26		(X15)	Question II-2 (1 - a (2 - b (3 - c (4 - d

Column Totals	Column Spaces	Format	Variables Names	T - Tuskegee A - Auburn
	27		(X16) Question II-3	(1 - a (2 - b (3 - c
	28		(X17) Question II-4	(1 - a (2 - b (3 - c
	29		(X18) Question II-5	(1 - Yes (0 - No
	30		(19) Question III-1	(1 - a (2 - b (3 - c
	31		(X20) Question III-2	(1 - Yes (0 - No Does not apply to Auburn
	32		(X21) Ques.III-2 Auburn Ques.III-3 T.I.	(1 - Yes (0 - No
	33		(X22) Ques.III-3 Auburn Ques.III-4 T.I.	(1 - Yes (0 - No
	34		(X23) Ques.III-4 Auburn Ques.III-5 T.I.	(1 - Yes (0 - No
	35		(X24) Ques. IV-1	(1 - Yes (0 - No Does not apply to Auburn
	36		(X25) Ques. IV-1 Auburn Ques. IV-2 T.I.	(1 - Yes (0 - No
	37		(X26) Ques. IV-2 Auburn Ques. IV-3 T.I.	(1 - Yes (0 - No
	38		(X27) Ques. IV-3 Auburn Ques. IV-4 T.I.	(1 - a (3 - c (2 - b (4 - d
	39		(X28) Ques. IV-4 Auburn Ques. IV-5 T.I.	(1 - a (0 - b
	40		(X29) Ques. IV-5 Auburn Ques. IV-6 T.I.	(1 - Yes (0 - No
	41		(X30) Ques. IV-6 Auburn Ques. IV-7 T.I.	(1 - a (3 - c (2 - b (4 - d

Column Totals	Column Spaces	Format	Variables Names	T - Tuskegee A - Auburn
	42		(X31) Question V - 1 (a)	(1 (2 or 3
	43		(X32) Question V - 1 (b)	(1 (2 or 3
	44		(X33) Question V - 1 (c)	(1 (2 or 3
	45		(X34) Question V - 1 (d)	(1 (2 or 3
	46		(X35) Question V - 1 (e)	(1 (2 or 3
	47		(X36) Question V - 1 (f)	(1 (2 or 3
	48		(X37) Question V - 2	Specialty Choice
	49		(X38) Question V - 3	(1 - a (2 - b (3 - c 4 Not Applicable
	50		(X39) Question VI-1 a.	(1 - Some (0 - None
	51		(X40) Question VI-1 b.	(1 - Some (0 - None
	52		(X41) Question VI-1 c.	(1 - Some (0 - None
	53		(X42) Question VI-1 d.	(1 - Some (0 - None
	54		(X43) Question VI-1 e.	(1 - Some (0 - None
	55		(X44) Question VI-1 f.	(1 - Some (0 - None
	56		(X45) Question VI-1 g.	(1 - Some (0 - None

Column Totals	Column Spaces	Format	Names	Variables T - Tuskegee A - Auburn
	57		(X46) Ques. VII-1	(1 - a (2 - b (3 - c
	58		(X47) Ques. VII-2	(1 - Yes (0 - No
	59		(X48) Ques. VII-3	(1 - Yes (0 - No
	60		(X49) Ques. VII-4	(1 - a (2 - b (3 - c (4 - d
	61		(X50) Ques. VII-5	(1 - a (2 - b (3 - c (4 - d (5 - e

APPENDIX 4

Tuskegee Institute

TUSKEGEE INSTITUTE
ALABAMA 36088

SCHOOL OF VETERINARY MEDICINE
OFFICE OF THE DEAN

February 5, 1982

Dear Dr.

Enclosed is a questionnaire that is being sent to all alumni from the years 1963 to and including 1978. We believe this fifteen-year overall view will give us a clear picture of the progress our graduates have made, an awareness of our shortcomings, and a vast pool of knowledge to tap in order that we might update our current and future programs.

Dr. if you feel you do not care to participate in this survey, we thank you for taking the time to read and consider the questions. If you do respond, we shall appreciate as prompt an answer as possible so that we might have some compilations made in time for the Symposium.

This year our 17th Annual Symposium will be held April 5-6, and we can promise you an outstanding program that you will not want to miss.

We know we can depend on all of you to support us in these endeavors and look forward to your response.

Sincerely,

E. W. Adams, D.V.M., Ph.D.
Associate Dean

EWA:vsd

Enclosure

STRICTLY CONFIDENTIAL

TUSKEGEE INSTITUTE
SCHOOL OF VETERINARY MEDICINE

VETERINARY MEDICAL EDUCATION STUDY

ALUMNI QUESTIONNAIRE

NAME: _____ Year Graduated _____ Date: _____

I. Background Information

1. Sex _____ 2. Race _____

3. Age _____ 4. Home State _____

5. Current Employment _____

_____

6. What specific area in Veterinary Medicine do you consider your specialty?

_____

7. Degrees Obtained B.Sc./B.A. _____ M.Sc./M.A. _____ D.V.M. _____

Ph.D. _____ M.P.H. _____ D.P.H. _____ Other _____

8. Estimate of Current Income

$15,000--$25,000 _____ $25,000--$35,000 _____
$35,000--$40,000 _____ $40,000--$50,000 _____
$50,000--$60,000 _____ $60,000 and above _____

9. States Licensed to Practice

_____ _____

_____ _____

_____ _____

10. Board Certification

_____ _____

II. Interests

1. Did courses taken in veterinary medical school adequately prepare you for entrance in areas selected?

   Yes _____ No _____ Explain: _____

   _____

2. Do you feel you would have been more prepared if you had attended a different veterinary medical school?

   Yes _____ No _____ Explain: _____

   _____

3. Do you feel you would have been more satisfied if you had pursued another area of study?

   Yes _____ No _____ Explain: _____

   _____

III. Satisfaction

1. How would you rate the effectiveness of your veterinary education at Tuskegee Institute?

   Excellent _____ Good _____ Adequate _____ Poor _____

2. Would you encourage your child (or other younger persons) to attend Tuskegee Institute School of Veterinary Medicine?

   Yes _____ No _____ Explain: _____

   _____

3. How do you feel the general public in your specialty area rates the School of Veterinary Medicine at Tuskegee Institute?

   Excellent _____ Good _____ Adequate _____ Poor _____

4. How satisfied are you with your career to date?

   _____ Not satisfied
   _____ Slightly satisfied
   _____ Somewhat satisfied
   _____ Greatly satisfied
   _____ Extremely satisfied

5. What are your future plans at the present time?

_____ Move into another field of veterinary medicine

_____ Retire from veterinary medicine within the next five years.

_____ Leave veterinary medicine for another full-time occupation.

_____ Study for specialty Boards.

_____ Undertake study toward a graduate degree.

IV. Specialty Choices

1. What was your initial area of employment after graduation from Tuskegee Institute School of Veterinary Medicine?

_____

2. Was this your specialty choice? Yes _____ No _____

Explain _____

_____

3. Indicate your areas of employment since graduation until today. (Indicate the number of years at each job.)

a) _____ _____

b) _____ _____

c) _____ _____

d) _____ _____

e) _____ _____

4. What were the important factors that determained your final choice of a specialty. Please rank the following with (1) being the most important and others in descending order.

_____ Strong interest before entering professional program.

_____ Good potential income.

_____ Intellectually and professionally rewarding.

_____ Interest developed after entering veterinary mecical program.

_____ Other (Explain) _____

_____

V. Optimal Training Emphasis

Based on your professional needs, what emphasis do you feel is the optimal training for curricular areas listed below:

	No Opinion	Needed Less	Right Amount	Needed More
Anatomy (Gross & Histology)				
Anatomy (Neuroanatomy)				
Anatomy (Applied)				
Biochemistry				
Microbiology				
Poultry Diseases				
Pathology (Basic & Systemic)				
Clinical Pathology				
Applied Pathology (Necropsy				
Physiology				
Pharmacology				
Toxicology				
Public Health				
Epidemiology				
Small Animal Clinics				
Small Animal Medicine				
Small Animal Surgery				
Parasitology				

	No Opinion	Needed Less	Right Amount	Needed More
Equine Surgery				
Equine Medicine				
Food Animal Medicine				
Large Animal Surgery				
Laboratory Animal Medicine				
History Taking				
Diagnostic Skills				
Physical Examination				
Therapeutics				
Problem-Solving Skills				
Obstetrics/ Large Animal Reproduction				
Nutrition, Small Animal				
Nutrition, Large Animal				
Surgical Skills				
Emergency Care				
Patient Management				
Client Communications				
Business Management				
Radiology				
Ethics and Jurisprudence				
Economics and Business Management				

Should a preceptorship be required for graduation?

Yes _____ No _____

VI. Student Perception of Veterinary Medical Program

	No Opinion	Very Weak	Weak	Strong	Very Strong
Curriculum	_____	_____	___	_____	_____
Informal Faculty Contact	_____	_____	___	_____	_____
Large Animal Clinical Exp.	_____	_____	___	_____	_____
Small Animal Clinical Exp.	_____	_____	___	_____	_____
Relationships with Other Students	_____	_____	___	_____	_____
Admission Process	_____	_____	___	_____	_____

VII. Future Employment

1. From your experience in the job market, how do you rate future employment opportunities for recent graduates?

_____ Excellent _____ Satisfactory

_____ Less than Satisfactory _____ Poor

2. What suggestions could you make that would help enhance job opportunities for Tuskegee Institute graduates?

_____

_____

_____

_____

_____

END OF QUESTIONNAIRE. Thank you for your time and cooperation. Please return in the self-addressed, stamped envelope.

_____
E. W. Adams
Associate Dean

APPENDIX 5

ALUMNI DATA

COLUMNS	FORMAT	VARIABLE	DESCRIPTION AND CODE	
1, 2, 3	F3.0	ID	First 3 initials	
4, 5	F2.0	X0	Last 2 digits/Yr. of Graduation	
6	F1.0	X1	Sex: 1 - Male / 2 - Female	
7, 8, 9	3F1.0	X21	Black	1 - Yes
		X22	White	0 - No
		X23	Other	
10,11	F2.0	X3	Age	
12,13	F2.0	X4	Home State (GY = Guyana/GH = Ghana)	
		X50	Work Location	
14 - 20	7F1.0	X51	Practice Type	Small Animal
		X52		Large Animal
		X53		Mixed
		X54		Teaching/Research
		X55		Government
		X56		Industry
		X57		Other (Inc. Military)
21 - 27	7F1.0	X61	Specialty	Small Animal
		X62		Large Animal
		X63		Mixed
		X64		Teaching/Research
		X65		Government
		X66		Industry
		X67		Other (Inc. Military)
28 - 34	7F1.0	X71	Degrees	BSc/Ba
		X72		MSc/MA
		X73		M.D.
		X74		Ph.D.
		X75		M.PH
		X76		D.PH
		X77		Other
35	F1.0	X8	Salary	1 - 15-25,000
				2 - 25-35,000
				3 - 35-40,000
				4 - 40-50,000
				5 - 50-60,000
				6 - 60,000 and above

COLUMNS	FORMAT	VARIABLE	DESCRIPTION AND CODE
	5F2.0		States Licensed to Practice
36,37		X9A	State 1 (2 letters only--Use Post Office
38,39		X9B	State 2 Abbreviations)
40,41		X9C	State 3
42,43		X9D	State 4
44,45		X90	Others 5
46	F1.0	X10	Board Certified: 1 = Yes/0 = No
47	F1.0	X21	1 = Yes/0 = No
48	F1.0	X22	1 = Yes/0 = No
49	F1.0	X23	1 = Yes/0 = No
50	F1.0	X31	1 = Excellent 2 = Good 3 = Adequate 4 = Poor
51	F1.0	X32	1 = Yes/0 = No
52	F1.0	X33	1 = Excellent 2 = Good 3 = Adequate 4 = Poor
53	F1.0	X34	1 = Extremely Satisfied 2 = Greatly Satisfied 3 = Somewhat Satisfied 4 = Slightly Satisfied 5 = Not Satisfied
54 - 58	5F1.0	X35A	Move
		X35B	Retire
		X35C	Leave Vet. Med.
		X35D	Study for Boards
		X35E	Study for Another Degree
		X35F	Other
		X35G	No Response
59 - 65	7F1.0	X411	SA
		X412	LA
		X413	Mixed
		X414	Tch/Res
		X415	Govt.
		X416	Ind.
		X417	Other
66	F1.0	X42	Choice? 1 = Yes/0 = No

COLUMNS	FORMAT	VARIABLE	DESCRIPTION AND CODE
67 - 71	5F1.0	X441	1 = Strong Interest
		X442	2 = Good Income
		X443	3 = Rewarding
		X444	4 = Interest Developed Later
		X445	5 = Other

NEW LINE ON DATA SHEET

1 - 39	39F1.0	X501	Anatomy(Gross & Hist)	1	=	More
		X502	Anatomy(Neuro)	2	=	Right Amt.
		X503	Anatomy(Applied)	3	=	Less
		X504	Biochemistry	4	=	No Opinion
		X505	Microbiology			
		X506	Poultry Disease			
		X507	Pathology (Basic & Sys.)			
		X508	Clinical Pathology			
		X509	Applied Path (Necro)			
		X510	Physiology			
		X511	Pharmacology			
		X512	Toxicology			
		X513	Public Health			
		X514	Epidemiology			
		X515	Small Animal Clinics			
		X516	Small Animal Medicine			
		X517	Small Animal Surgery			
		X518	Parasit.			
		X519	Equine Surgery			
		X520	Equine Medicine			
		X521	Food Animal Medicine			
		X522	Large Animal Surgery			
		X523	Laboratory Animal Medicine			
		X524	History Taking			
		X525	Diagnostic Skills			
		X526	Physical Examinations			
		X527	Therapeutics			
		X528	Problem Solving Skills			
		X529	Obst./Large Animal Reprod.			
		X530	Nutrition-Small Animal			
		X531	Nutrition-Large Animal			
		X532	Surgical Skills			
		X533	Emergency Care			
		X534	Patient Management			
		X535	Client Communications			
		X536	Businesss Management			
		X537	Radiology			
		X538	Ethics and Juris.			
		X539	Econ. & Business Management			

COLUMNS	FORMAT	VARIABLE	DESCRIPTION AND CODE	
40		X540	Preceptorship?	1 = Yes/0 = No
41 - 46	6F1.0	X61	Curriculum	1 = Very Strong
		X62	Inf.Fac.Contact	2 = Strong
		X63	Lg.An.Clin.Exp.	3 = Weak
		X64	Sm.An.Clin.Exp.	4 = Very Weak
		X65	Rel w Other Stud.	5 = No Opinion
		X66	Admission Process	
47	F1.0	X71	Emp. Opportunities?	1 = Excellent
				2 = Satisfactory
				3 = Less/Satis.
				4 = Poor

TOTAL COLUMNS

TABLE 1

DESCRIPTIVE STATISTICS

VARIABLE NO.	NAME	MEAN	STANDARD DEVIATION	ST. ERR. OF MEAN	COEFF. OF VARIATION	SMALLEST VALUE	SMALLEST Z-SCORE	LARGEST VALUE	LARGEST Z-SCORE	RANGE	TOTAL FREQUENCY
1	x 3	0.541	0.500	0.0453	0.92493	0.0	-1.08	1.000	0.92	1.000	122
2	x 4	0.607	0.491	0.0444	0.80870	0.0	-1.24	1.000	0.80	1.000	122
3	x 6	3.241	0.360	0.0326	0.11121	2.400	-2.33	4.000	2.11	1.600	122
4	x 7	0.246	0.432	0.0391	1.75841	0.0	-0.57	1.000	1.74	1.000	122
5	x 8	32.647	9.954	0.9012	0.30491	7.000	-2.58	58.000	2.55	51.000	122
6	x 9	22.090	9.269	0.8392	0.41961	6.000	-1.74	49.000	2.90	43.000	122
7	x 10	28.008	8.258	0.7476	0.29483	11.000	-2.06	56.000	3.39	45.000	122
8	x 11	18.901	7.839	0.7097	0.41472	0.0	-2.41	40.000	2.69	40.000	122
9	x 12	32.278	8.598	0.7784	0.26636	2.000	-3.52	50.000	2.06	48.000	122
10	x 13	135.582	36.583	3.3121	0.26983	49.000	-2.37	267.000	3.59	218.000	122
11	x 14	3.021	0.623	0.0564	0.20608	1.830	-1.91	4.000	1.57	2.170	122
12	x 15	2.933	0.601	0.0544	0.20508	1.650	-2.13	4.000	1.77	2.350	122

TABLE 2-a

ANALYSIS OF VARIANCE

	SUM OF SQUARES	DF	MEAN SQUARE	F RATIO
[illegible]SION	26.385	11	2.399	11.687
[illegible]IAL	25.450	124	0.205	

TABLE 2-b

MULTIPLE REGRESSIVE PARAMETERS

VARIABLE		COEFFICIENT	STD. ERROR	STD. REG. COEFF	T
INTERCEPT		-0.24084			
X 3	1	0.09747	0.086	0.078	1.134
X 4	2	0.13670	0.151	0.110	0.907
X 5	3	0.28710	0.161	0.222	1.787
X 6	4	0.47979	0.114	0.291	4.202
X 7	5	0.14650	0.101	0.101	1.452
X 8	6	0.00260	0.008	0.043	0.344
X 9	7	0.00389	0.007	0.058	0.521
X 10	8	0.02068	0.008	0.268	2.614
X 11	9	0.00672	0.007	0.083	1.020
X 12	10	0.01119	0.008	0.154	1.359
X 13	11	0.00140	0.002	0.081	0.588

TABLE 3

CORRELATION MATRIX

		X_3	X_4	X_6	X_7	X_8	X_9	X_{10}	X_{11}	X_{12}	X_{13}
		1	2	3	4	5	6	7	8	9	10
X 3	1	1.0000									
X 4	2	-0.1358	1.0000								
X 6	3	-0.0939	-0.0737	1.0000							
X 7	4	-0.0470	0.1092	-0.3451	1.0000						
X 8	5	-0.0527	-0.4585	0.0813	-0.2043	1.0000					
X 9	6	-0.0712	-0.5229	0.1745	-0.2035	0.7190	1.0000				
X 10	7	0.0749	-0.4991	0.0334	-0.1394	0.6628	0.6401	1.0000			
X 11	8	0.0095	-0.3466	0.1854	-0.1464	0.3075	0.4528	0.1048	1.0000		
X 12	9	0.0204	-0.4715	0.1108	-0.0497	0.7581	0.6963	0.6469	0.4149	1.0000	
X 13	10	-0.0566	-0.4965	0.1045	-0.2077	0.8000	0.7875	0.7120	0.4190	0.6877	1.0000
Y 1	11	0.0701	-0.4497	0.3188	-0.1027	0.5191	0.5762	0.5846	0.3149	0.5897	0.5696

TABLE 4

ANALYSIS OF VARIANCE

	SUM OF SQUARES	DF	MEAN SQUARE	F RATIO
REGRESSION	23.031219	3	7.677073	37.93
RESIDUAL	23.880875	118	0.2023802	

VARIABLES IN EQUATION

		COEFFICIENT	STD. ERROR OF COEFF	STD. REG. COEFF	TOLERANCE	F TO REMOVE
(Y-INTERCEPT		-0.023)				
X 6	3	0.468	0.114	0.271	0.98521	16.75
X 10	7	0.028	0.007	0.367	0.57998	18.13
X 12	9	0.023	0.006	0.322	0.57350	13.79

62 63

TABLE 4

ANALYSIS OF VARIANCE

	SUM OF SQUARES	DF	MEAN SQUARE	F RATIO
REGRESSION	23.031219	3	7.677073	37.93
RESIDUAL	23.880875	118	0.2023802	

VARIABLES IN EQUATION

	COEFFICIENT	STD. ERROR OF COEFF	STD. REG. COEFF	TOLERANCE	F TO REMOVE
(Y-INTERCEPT	-0.023)				
X 6 3	0.468	0.114	0.271	0.98521	16.75
X 10 7	0.028	0.007	0.367	0.57998	18.13
X 12 9	0.023	0.006	0.322	0.57350	13.79

TABLE 5

CLASSIFICATION FUNCTIONS

GROUP	UNDER TWO	TWO AND OVER
VARIABLE 8 x 10	0.29537	0.46885
CONSTANT	-3.32683	-7.32915

CLASSIFICATION MATRIX

GROUP	PERCENT CORRECT	NUMBER OF CASES CLASSIFIED INTO GROUP	
		UNDER TWO	TWO AND OVER
Under Two	83.3	5	1
Two and Over	74.6	33	97
TOTAL	75.0	38	98

TABLE 6

CLASSIFICATION FUNCTIONS

VARIABLE	GROUP	
	UNDER TWO	2.5 AND OVER
3 x 6	27.12357	29.74240
7 x 10	0.36868	0.45657
9 x 12	0.30274	0.43254
CONSTANT	-49.74692	-64.20619

CLASSIFICATION MATRIX

GROUP	PERCENT CORRECT	NUMBER OF CASES CLASSIFIED INTO GROUP	
		UNDER TWO	2.5 AND OVER
UNDER TWO	83.3	25	5
2.5 AND OVER	76.1	22	70
TOTAL	77.9	47	75